

Application No.: 10/082,318

Docket No.: 20402-00642-US

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

Claims 1-12 (Cancelled)

13. (Currently amended) A method of manufacturing a pressure transducer comprising the steps of:

preparing a substrate having a first surface and a second surface opposed to the first surface;

forming a fixed electrode in the first surface of said substrate;

forming a sacrificial layer over said fixed electrode;

forming a diaphragm layer made of an insulating material over said sacrificial layer;

forming a hole which extends from the second surface of said substrate to said sacrificial layer;

injecting gasses into said hole to remove said sacrificial layer in dry etching to form a cavity so that said diaphragm layer is deformed in response to an applied pressure; and

~~A method as set forth in claim 12, further comprising the step of forming at least one waved portion on the first surface of said substrate.~~

14. (Currently amended) A method of manufacturing a pressure transducer comprising the steps of:

preparing a substrate having a first surface and a second surface opposed to the first surface;

forming a fixed electrode in the first surface of said substrate;

Application No.: 10/082,318

Docket No.: 20402-00642-US

forming a sacrificial layer over said fixed electrode;
forming a diaphragm layer made of an insulating material over said sacrificial layer;
forming a hole which extends from the second surface of said substrate to said sacrificial layer;
injecting gasses into said hole to remove said sacrificial layer in dry etching to form a cavity so that said diaphragm layer is deformed in response to an applied pressure;
and

~~A method as set forth in claim 12, further comprising the step of forming at least one waved portion on a surface of said sacrificial layer.~~

15. (Currently amended) A method as set forth in ~~claim 12~~ claim 13 or 14, wherein said substrate is made of a semiconductor substrate having integrated circuit elements which form a detector designed to measure a capacitance between the fixed and moving electrodes.

16. (Currently amended) A method as set forth in ~~claim 12~~ claim 13 or 14, wherein said diaphragm is made of an inorganic material, and said sacrificial layer is made of an organic material.

17. (Currently amended) A method as set forth in ~~claim 12~~ claim 13 or 14, wherein said diaphragm is ~~made from~~ a compound of silicon and one of oxygen and nitrogen.

18. (Currently amended) A method as set forth in ~~claim 12~~ claim 13 or 14, wherein said sacrificial layer is made of polyimide.

Application No.: 10/082,318

Docket No.: 20402-00642-US

19. (Currently amended) A method as set forth in ~~claim 12~~ claim 13 or 14, wherein the removal of said sacrificial layer is achieved in the dry etching using oxygen plasma.

20. (Currently amended) A method as set forth in ~~claim 12~~ claim 13 or 14, wherein said gas injecting step removes said sacrificial layer so as to leave a peripheral portion of said sacrificial layer.

21. (Original) A method of manufacturing a pressure transducer comprising the steps of:

preparing a substrate having a first surface and a second surface opposed to the first surface;

forming a fixed electrode in the first surface of said substrate;

forming an insulating layer over said fixed electrode;

forming a sacrificial layer on said insulating layer;

forming a diaphragm layer made of a conductive material over said sacrificial layer;

forming a hole which extends from the second surface of said substrate to said sacrificial layer; and

injecting gasses into said hole to remove said sacrificial layer in dry etching to form a cavity so that said diaphragm layer is deformed in response to an applied pressure.

22. (Original) A method as set forth in claim 21, further comprising the step of forming at least one waved portion on the first surface of said substrate.

23. (Original) A method as set forth in claim 21, further comprising the step of forming at least one waved portion on a surface of said sacrificial layer.

Application No.: 10/082,318

Docket No.: 20402-00642-US

24. (Original) A method as set forth in claim 21, wherein said substrate is made of a semiconductor substrate having integrated circuit elements which form a detector designed to measure a capacitance between the fixed and moving electrodes.

25. (Original) A method as set forth in claim 21, wherein said diaphragm is made of an inorganic material, and said sacrificial layer is made of an organic material.

26. (Currently amended) A method as set forth in claim 21 wherein said diaphragm is made from form a compound of silicon and one of oxygen and nitrogen.

27. (Original) A method as set forth in claim 21, wherein said sacrificial layer is made of polyimide.

28. (Original) A method as set forth in claim 21, wherein the removal of said sacrificial layer is achieved in the dry etching using oxygen plasma.

29. (Original) A method as set forth in claim 21, wherein said gas injecting step removes said sacrificial layer so as to leave a peripheral portion of said sacrificial layer.

30. (Original) A method of manufacturing a plurality of pressure transducers using a signal substrate comprising the steps of:

preparing a single substrate having a first surface and a second surface opposed to the first surface;

forming fixed electrodes in the first surface of said substrate;

forming a sacrificial layer on each of said fixed electrode;

forming a diaphragm layer made of an insulating material over each of said sacrificial layer;

Application No.: 10/082,318

Docket No.: 20402-00642-US

forming a hole which extends from the second surface of said substrate to each of said sacrificial layer;

forming a cutting groove between adjacent two of the pressure transducers for separating the pressure transducers from each other; and

injecting gasses into said hole to remove said sacrificial layer in dry etching to form a cavity so that said diaphragm layer is deformed in response to an applied pressure.